INTERNATIONAL SEARCH REPORT

Interr al Application No
PCT/BE 03/00217

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 G21K5/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 G21K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JEAN-LUC MORELLE, YVES JONGEN, BENOIT GEORGES: "An efficient 18-F fluoride production method using a recirculating 18-O water target" PROCEEDINGS OF THE 3RD WORKSHOP ON TARGETRY AND TARGET CHEMISTRY, 19-23 JUNE 1989, December 1990 (1990-12), page 50,51, XP002242973 Vancouver, Canada page 50 - page 51; figure 1 -----	1,2,5,6, 16,18,21
X	PATENT ABSTRACTS OF JAPAN vol. 002, no. 080 (M-025), 24 June 1978 (1978-06-24) & JP 53 046598 A (EBARA CORP;OTHERS: 01), 26 April 1978 (1978-04-26) abstract ----- -/--	1,7-10, 16,17,21

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

° Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 March 2004	27.07.04

Name and mailing address of the ISA	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Jandl, F

Form PCT/ISA/210 (second sheet) (January 2004)

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	B.W. WIELAND, G.T. BIDER ET AL: "Current status of CTI target systems for the production of PET Radiochemicals" PROCEEDINGS OF THE 3RD WORKSHOP ON TARGETRY AND TARGET CHEMISTRY 19-23 JUNE 1989, December 1990 (1990-12), page 34-38, XP002242974 Vancouver, Canada page 34 - page 35; figure 1	1,5, 7-17,21
X	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 06, 30 June 1997 (1997-06-30) & JP 09 054196 A (NIHON MEDI PHYSICS CO LTD), 25 February 1997 (1997-02-25) abstract; figures 1,5,7	1,7-10, 12-17,21
P,X	WO 02/101758 A (LAI DUC ;KISELEV MAXIM Y (US); EASTERN ISOTOPES INC (US)) 19 December 2002 (2002-12-19) page 1, lines 10,11 page 3, line 11 - page 4, line 8 page 5, lines 11-14 page 6, lines 13,14 page 9, lines 27-30 page 13, lines 6-21; figure 1	1,2,5,6, 12-14, 16,18,21

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ıational application No.
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Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:

3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-19, 21

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest.

☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-19, 21

A device for producing a radioisotope form a target fluid irradiated with a beam of accelerated charged particles comprising in a circulation circuit an irradiation cell with a cavity including an inlet and outlet, a pump, and an external heat exchanger.
The pump flow rates, the volumes of the cavity and the circuit, the positioning of the in- and outlet in the cavity.
A method for producing a radioisotope by using the target fluid as a precursor in the cell, irradiating the cell with a beam of accelerated charged particles, circulating the target fluid in the circuit, controlling the pressure in the circuit and cooling the fluid with an external heat exchanger so that the fluid inside the cavity remains in the liquid state.
The use of the device for manufacturing a radiopharmaceutical compound.

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2. claim: 20

An irradiation cell comprising a metallic insert forming a cavity with an inlet and outlet designed to house a target fluid, the cavity having a central axis around which a surface is developed, the cavity being closed by an irradiation window and a second surface perpendicular to the central axis and opposed to the window.
The inlet being connected to the second surface perpendicular to the central axis, while the outlet being connected to the lateral surface.

INTERNATIONAL SEARCH REPORT

Information on patent family members

Intern[illegible] Application No
PCT/BE 03/00217

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 53046598 A	26-04-1978	NONE	
JP 09054196 A	25-02-1997	NONE	
WO 02101758 A	19-12-2002	US 2003007588 A1	09-01-2003
		EP 1397812 A1	17-03-2004
		WO 02101758 A1	19-12-2002
		US 2003194039 A1	16-10-2003